



Green Bay Chronic Nuisance Notification Evaluation, 2006-2010

Prepared for the
Green Bay Police Department

by

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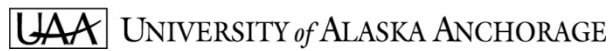


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Executive summary

Green Bay City Ordinance Chapter 28 allows the municipality to recover the cost of providing police services for chronic nuisances. Enforcement of Chapter 28 began in October 2006 and continues as of this writing. This report examined calls for service at properties with chronic nuisance enforcement to determine if enforcement was associated with a reduction in calls for service.

Findings

Our analysis found that:

- There is an immediate, significant reduction in calls for service after chronic nuisance enforcement.
- The reduction in calls for service persists over a four-year period. There is not a general “rebound effect” at chronic nuisance parcels after enforcement ends.
- The reduction in calls for service persists even after controlling for number of units, district, and city-wide longitudinal trends.

Key recommendations

Based on our findings, we recommend that the Green Bay Police Department:

- Continue recording detailed information for each chronic nuisance case.
- Continue using human judgment when making chronic nuisance determinations.
- Collect data on additional outcome measures such as community satisfaction, diffusion of crime prevention benefits, and officer time spent at each property.
- Consider creating objective criteria for compliance.
- Encourage officers and dispatchers to enter accurate arrival and clear times in the CAD to facilitate analysis.
- Partner with local landlord associations to encourage their members to engage in crime prevention and good management.
- Continue development of early warning systems for internal and external use.
- Consider amending the ordinance to reduce police officer and analyst time required.

Conclusions

Enforcing the chronic nuisance ordinance is costly in terms of officer and analyst hours. This analysis found that such enforcement is associated with reduced calls for service. We note, however, that the best use of the chronic nuisance ordinance may be as a credible threat. That is, the credible threat of chronic nuisance enforcement can be a powerful enticement for property owners to partner with the Green Bay Police Department on crime prevention and nuisance abatement efforts.

This report discusses police calls for service at places with chronic nuisance notification. The goal is to determine if the current Green Bay Police Department's chronic nuisance enforcement has resulted in a reduction of calls for service at targeted locations. First, the chronic nuisance ordinance and process are described. Chronic nuisance places are described next, followed by an analysis of police calls for service before and after chronic nuisance notification. A multivariate mixed model is estimated next. We find that chronic nuisance notifications are associated with a significant reduction in subsequent calls for service in both the short and long term. The report concludes with suggestions for future enforcement and data collection.

The chronic nuisance ordinance and process

Property owners are legally responsible for proper maintenance and management of their properties. Extraordinarily poor management of property can lead to state action under Chapter 823, Wis. Stats., including the possibility of forfeiture of the property. Municipalities in Wisconsin may also enact local ordinances that further define nuisance activity and make other remedies available. Green Bay City Ordinance Chapter 28 is one such ordinance. It allows the city to recover the costs for providing police services for "nuisance" activities at a property due to the owner's failure to abate nuisance activity. Chapter 28.401 defines a chronic nuisance premises as an individual dwelling unit, entire apartment building, or business¹ at which three or more nuisance activities have occurred within a 12-month period. Nuisances reported by the property owner do not count toward the three calls in a year standard. Multiple nuisances can occur on the same day. Nuisances are defined as any of the following that result in enforcement action (warning, citation, or arrest):

- a) An act of Harassment, as defined in §947.013, Wis. Stats.
- b) Disorderly Conduct, as defined in §947.01, Wis. Stats.
- c) Battery, Substantial Battery, or Aggravated Battery, as defined in §940.19, Wis. Stats.
- d) Lewd and Lascivious Behavior, as defined in §944.20, Wis. Stats.
- e) Prostitution, as defined in §944.30, Wis. Stats.
- f) Theft, as defined in §943.20, Wis. Stats.
- g) Receiving Stolen Property, as defined in §943.34, Wis. Stats.
- h) Arson, as defined in §943.02, Wis. Stats.
- i) Possession, Manufacture, or Delivery of a Controlled Substance or related offenses, as defined in Ch. 961, Wis. Stats.
- j) Gambling, as defined in §945.02, Wis. Stats.
- k) Animal violations, as defined in Ch. 8, Green Bay Municipal Code.
- l) Trespassing, as defined in §943.13 and §943.14, Wis. Stats.
- m) Weapons violations, as defined in Section 27.17, Green Bay Municipal Code.
- n) Noise violations, as defined in Section 27.201, Green Bay Municipal Code.
- o) Any conspiracy to commit, as defined in §939.31, Wis. Stats., or attempt to commit, as defined in §939.32, Wis. Stats., any of the activities, behaviors, or conduct enumerated in a through n above.
- p) The execution of arrest or search warrants at a particular location.
- q) Alcohol violations, as defined in Chapter 33, Green Bay Municipal Code, and §125.07, Wis. Stats.
- r) Obstructing or Resisting an Officer, as defined in §946.41, Wis. Stats.
- s) City of Green Bay Inspection-related calls where the Police Department responds.

¹ The Green Bay Police Department enforces the local chronic nuisance ordinance at the land parcel level because ownership is typically determined by land parcel.

Property owners are notified that their property is a chronic nuisance. The notice includes a legal description of the premises and a description of the nuisance activities that have occurred. The chronic nuisance notice also includes a statement that the cost of future enforcement may be assessed as a special charge² against the property. The chronic nuisance notice includes an order to meet with the police chief or his/her designee to create an abatement plan. Within 10 days of receiving the chronic nuisance notice, the property owner is required to submit a written plan for abating the nuisance. The police department typically assists with writing the nuisance abatement plan based on the specific problems faced by each property. Often, property owners with chronic nuisances on their properties are inexperienced and unable to write their own abatement plans without police assistance. Property owners may elect to write their own plan. Owners can be cited for failing to meet with police and for failing to submit a plan. The plan must also include contact information for a person living within 60 miles of the property who shall act as a point of contact for future contacts with police, fire, or inspections. The police may calculate the cost of police responses to additional nuisance activity that occurs more than 15 days after the chronic nuisance notification has been issued if the property owner has not made reasonable efforts to abate the nuisance.

The chronic nuisance process is used sparingly by the Green Bay Police Department for two reasons. First, using the formal chronic nuisance notification process could create an adversarial relationship between police and property owners if it were overused. The ordinance allows the police department to be flexible in what is billed – when the property owner is making “reasonable efforts” to abate the nuisance he/she is not billed. Even so, the prospect of being billed for future police services would create a great deal of anxiety in any property owner. Billing is best seen as an incentive to work with the police department; billing is a lever used to encourage owners to recognize the problem.

The Green Bay Police Department generally attempts to work with owners before invoking the chronic nuisance ordinance. When the police department can get cooperation from an owner without resorting to the formal process they do so. The ordinance provides leverage for handling problem properties informally. Some owners even contact the police department first, concerned that their properties might be subject to the ordinance. Allowing the police department to exercise discretion when dealing with problem properties is therefore essential to maintaining good community relations.

Second, in addition to problems from overuse, the investigation and analysis time required by the language of the ordinance can be substantial. Each call for service must be individually validated against the qualifying statutes, an enforcement action must be verified, and the originating complainant must not be the owner. There is currently no automated system in place to validate calls against these requirements. It is unlikely that an automated system could be easily implemented given the complexity of validation requirements.

² A special charge is assessed against property taxes such that the special charge is paid *first*, before property taxes. Special charges therefore cannot be ignored without incurring substantial penalties for nonpayment of property taxes, ultimately including forfeiture of the property.

Chronic nuisance enforcement at single-notice parcels

A total of 163 land parcels³ at which chronic nuisance enforcement occurred once are included in the following tables. Chronic nuisance parcels that were notified after October 7, 2006 and before December 27, 2010 were included. Table 1 lists the number of parcels by year.

Table 1: Number of chronic nuisance enforcement places by year

	2006	2007	2008	2009	2010	Total
Total	9	46	45	35	28	163

Data is included from 10/7/06-12/27/10; places with multiple enforcement periods are excluded from this table.

The number of places notified peaked in 2007 and has fallen every year since. This is consistent with how the ordinance is enforced. Owners are more likely to work with police informally because the ordinance provides a clear financial incentive for compliance.

Chronic nuisance enforcement has occurred in each district but is used most frequently in Districts B and C. These are also the two districts with highest call volume, especially the very near downtown areas on each side of river. These two districts combined account for 79.8% of the total parcels with chronic nuisance enforcement. Figure 1 shows all of the nuisance locations throughout the study period by district and sector. The spatial distribution is likely related to the type of place that experiences chronic nuisance enforcement. In Green Bay, the chronic nuisance process is used primarily at residential properties occupied by renters. Sixteen (9.82%) of the properties are owner-occupied. Eight (4.94%) are businesses. The majority of parcels (86%, 140 parcels) with nuisance enforcement during the period October 7, 2006 through December 27, 2010 were residential properties occupied by renters.

³ Land parcels can have multiple addresses. A total of 202 addresses are included in this study. These 202 addresses comprise 163 parcels.

Figure 1: Nuisance places by district

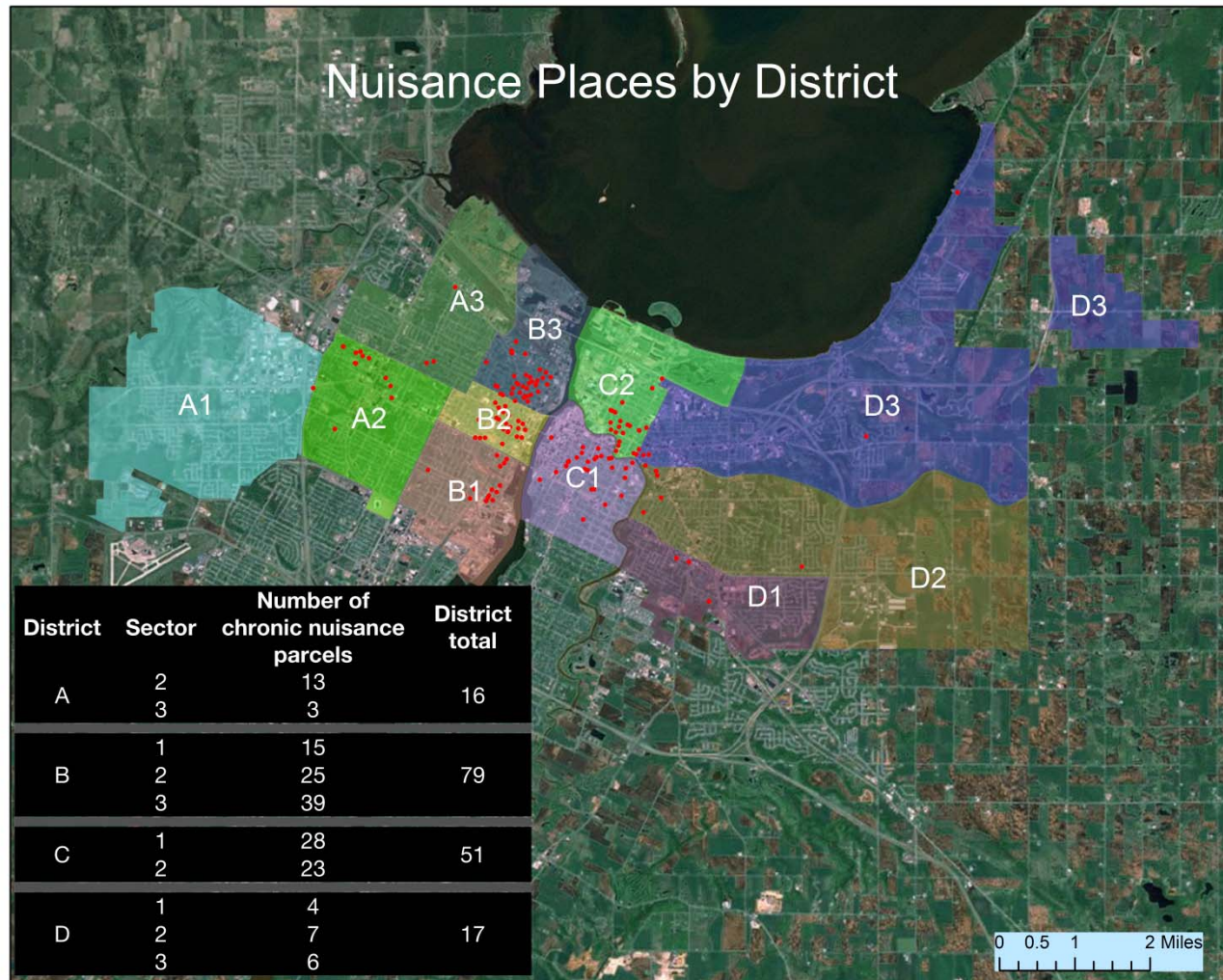


Table 2 shows the frequency distribution of living units at residential places with chronic nuisance notifications. The most common type of place where chronic nuisance is enforced is a renter-occupied residential duplex. The bulk of properties are relatively small, with nearly three-quarters (74%) having three or fewer living units.

Table 2: Frequency distribution of living units at residential chronic nuisance places

Number of living units	Frequency	Percent of residential chronic nuisance notifications	Cumulative percent
1	31	20.13	20.13
2	67	43.51	63.64
3	16	10.39	74.03
4	15	9.74	83.77
5	1	0.65	84.42
7	1	0.65	85.06
8	7	4.55	89.61
10	4	2.60	92.21
12	2	1.30	93.51
14	1	0.65	94.16
24	1	0.65	94.81
--*	8	5.19	100.00
Total	154	100.00	

*Data is not available for eight residential parcels. In at least four of these, the buildings were destroyed after the nuisance notification and information is no longer available for the previous structure.

Table 2 shows a somewhat counter-intuitive result: more units does not necessarily mean more calls for service. Large buildings or apartment complexes often have professional management who are trained how to properly maintain rental property and screen tenants. Smaller properties are often owned by landlords with comparatively few properties who lack professional rental property experience. This suggests again that exercising discretion in enforcement is key. Educating landlords is a crucial part of both informal attempts to abate the nuisance and the formal nuisance abatement meeting.

In most cases, chronic nuisance enforcement consists of notifying and meeting with the owner of the property. Guided by police staff trained in crime prevention, the owner takes actions at his/her property that are expected to reduce calls for service and increase quality of life. In general, these actions are deemed successful by the police or are at least seen as a good faith effort to reduce calls for service. It is only when owners are reluctant to work with police that billing for excessive calls for service occurs. Put differently, the goal of the program is to *work with* property owners, not bill them. Accordingly, just 27 (16.6%) single-notification parcels were billed a total of \$22,548 during the study period. For those owners billed, the average total bill was \$835.11, with a standard deviation of \$937.65. Just five parcels accumulated bills of more than \$1,000⁴.

Green Bay's chronic nuisance process involves more than just a one-time notice. Once notified, properties are monitored for compliance on a regular basis so that property owners know if their efforts to abate the nuisance have been successful. Twenty-two (13.5%) of the 163 single-notification properties were still being monitored as of December 2010.

⁴ Recall that this section excludes places that had multiple enforcement periods.

Chronic nuisance enforcement and calls for service

Short term effects (3-12 months)

Calls for service⁵ at the 163 chronic nuisance parcels were tallied by month for 12 months before and 12 months after the chronic nuisance notification date. Table 3 shows the total calls for service at all 163 chronic nuisance parcels during pre-notification and post-notification periods. Three-, six-, and 12-month pre- and post-notification periods are shown. Calls for service are lower in each post-notification period compared to the pre-notification period. The chronic nuisance parcels generated 1,155 fewer calls for service in the 12 month period after notification compared to the 12 months before chronic nuisance notification.

Table 3: Total calls for service pre- and post-notification

	Number of chronic nuisance places	Total calls for service		Cumulative difference
		Pre-notification	Post-notification	
3 months*	163	1,301	751	550
6 months	163	2,275	1,415	860
12 months	163	3,642	2,487	1,155

*Time periods are relative to the chronic nuisance notification date; Table 1 shows the distribution of nuisance notifications by calendar year.

Table 4 shows the average calls for service pre- and post-notification. Three-, six- and 12-month periods are shown. Table 4 also shows the results of a matched pairs t-test of the pre- and post-notification monthly average calls for service. Parcels with chronic nuisance notifications see 1.12 fewer calls for service per month (on average) in the three months after notification compared to the three months before notification. Smaller reductions in average monthly calls for service are seen in the six and 12-month periods. Still, average calls for service are lower for each follow-up period. These differences are statistically significant, with $p < 0.000$, well above the usual standard of statistical significance ($p < 0.05$).

Table 4: Average monthly calls for service per parcel pre- and post-notification

	Average monthly calls for service		Difference	t-value
	Pre-notification	Post-notification		
3 months*				
Average	2.66	1.54	1.12	6.65
(s.d.)	(2.87)	(2.40)	(0.169)	$p < 0.000$

⁵ This analysis is not limited to calls that may be included in chronic nuisance notification and billing as defined in Chapter 28. All police calls for service were included in this analysis, including officer-initiated incidents and other incidents that would not be billable under the current ordinance.

6 months				
Average	2.32	1.45	0.88	7.85
(s.d.)	(2.65)	(2.30)	(0.112)	p<0.000
12 months				
Average	1.86	1.27	0.59	7.96
(s.d.)	(2.41)	(2.23)	(0.074)	p<0.000

*Time periods are relative to the chronic nuisance notification date; Table 1 shows the distribution of nuisance notifications by calendar year.

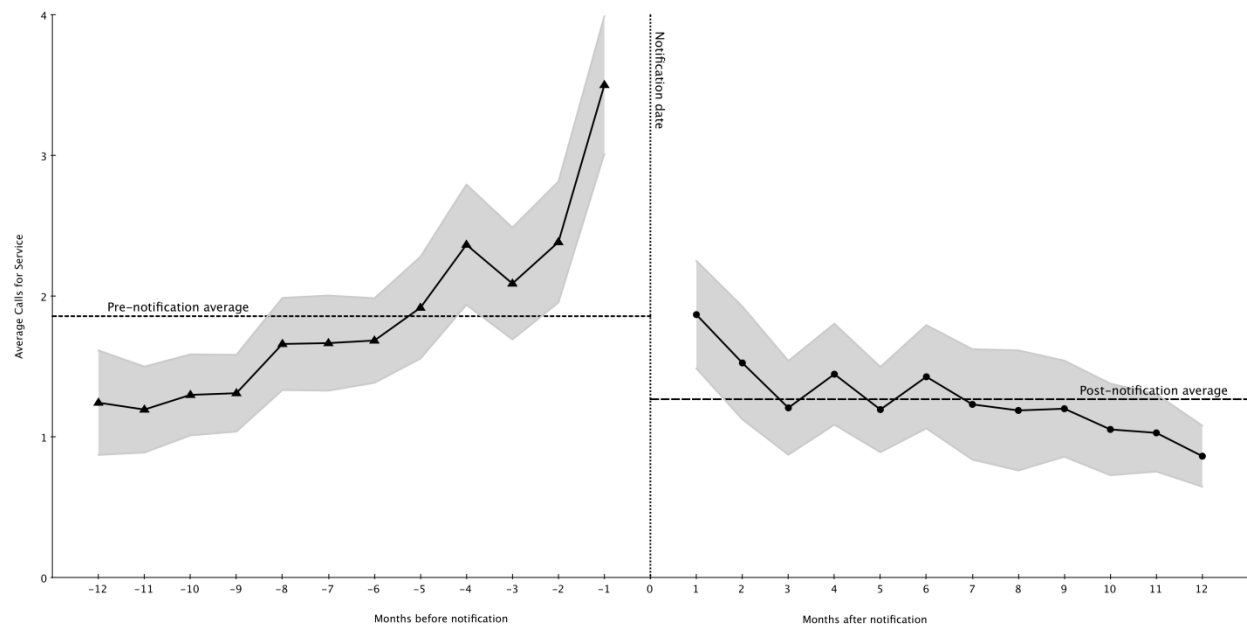
The reduction in monthly average calls for service is lower the longer the follow-up period extends (i.e., the difference column is smaller for longer follow-up periods). This apparent reduction in effectiveness over time is due to the distribution of calls for service during the pre-notification period. Figure 2 shows the monthly average of calls for service in the year before and year after notification. The shaded area is the 95% confidence interval of the mean⁶ for each month. Dotted lines display the 12-month pre- and post-notification averages from Table 4.

The figure shows that calls tend to increase beginning 6-8 months before nuisance notification, then immediately drop after notification. The 3-month pre-notification average is dominated by the month immediately before notification, whereas the longer pre-notification periods are not. Compared to the month immediately before notification, average calls for service drop by nearly 50% in the month after notification, from 3.5 calls per parcel per month to 1.9 calls per parcel per month.

A close examination of Figure 2 also reveals that the effects of nuisance notification persist for 12 months after nuisance notification. For properties that had just one notification during the study period, there is no “rebound” effect. This suggests that the nuisance abatement program, as enforced, is doing precisely what it is designed to do. Specifically, property owners are notified of a problem at their properties that requires remediation. The problem is resolved through a partnership between the owner and the police, calls for police service reduce to a reasonable level, and calls for service remain low thereafter.

⁶ The 95% confidence interval of the monthly average calls for service is calculated as $\bar{x} \pm 1.97\sqrt{s^2/n}$.

Figure 2: Average monthly calls for service and 95% confidence interval 12-months pre- and post-notification



The chronic nuisance process, as enforced, is associated with a significant reduction in future calls for service at nuisance properties over a 12 month period. Compared to the year before notification, there were 1,155 total fewer calls for service at the targeted properties in the year after notification. Caution is urged in interpreting that number, however. The analyses presented thus far do not account for overall crime trends in the city, do not account for differences in intervention periods, and cannot estimate the effect of multiple factors at once. The next section presents long-term effects.

Long-term effects (18-48 months)

The chronic nuisance process has been operating in its current form since October 7, 2006. This allows for longer follow-up periods than 12 months for some properties. Table 5 shows average monthly calls for service pre- and post-notification for 18 month, 24 month, 36 month, and 48 month follow-up periods. For each follow-up period, the post-notification average monthly calls for service are lower than pre-notification calls for service. All of these differences are statistically significant at the $p < 0.001$ level.

Table 5: Long-term follow-up period

	Average monthly calls for service			
	Pre-notification	Post-notification	Difference	t-value
18 months				
Average	1.62	1.13	0.48	7.81
(s.d.)	(2.51)	(2.02)	(0.06)	p<0.000
N=152				
24 months				
Average	1.48	1.09	0.393	7.02
(s.d.)	(2.52)	(1.95)	(0.05)	p<0.000
N=135				
36 months				
Average	1.19	0.95	0.236	5.64
(s.d.)	(1.88)	(1.67)	(0.04)	p<0.000
N=100				
48 months				
Average	1.10	0.83	0.27	5.64
(s.d.)	(1.86)	(1.61)	(0.04)	p<0.000
N=55				

*Time periods are relative to the chronic nuisance notification date; Table 1 shows the distribution of nuisance notifications by calendar year.

Figure 3 is calculated identically to Figure 2 but includes these longer follow-up periods. The time periods in Figure 3 are relative to the notification date, just as in Figure 2. Once again, the pre-notification averages are dominated by particularly problematic months immediately before notification.

Figure 3: Average monthly calls for service and 95% confidence interval 48-months pre- and post-notification

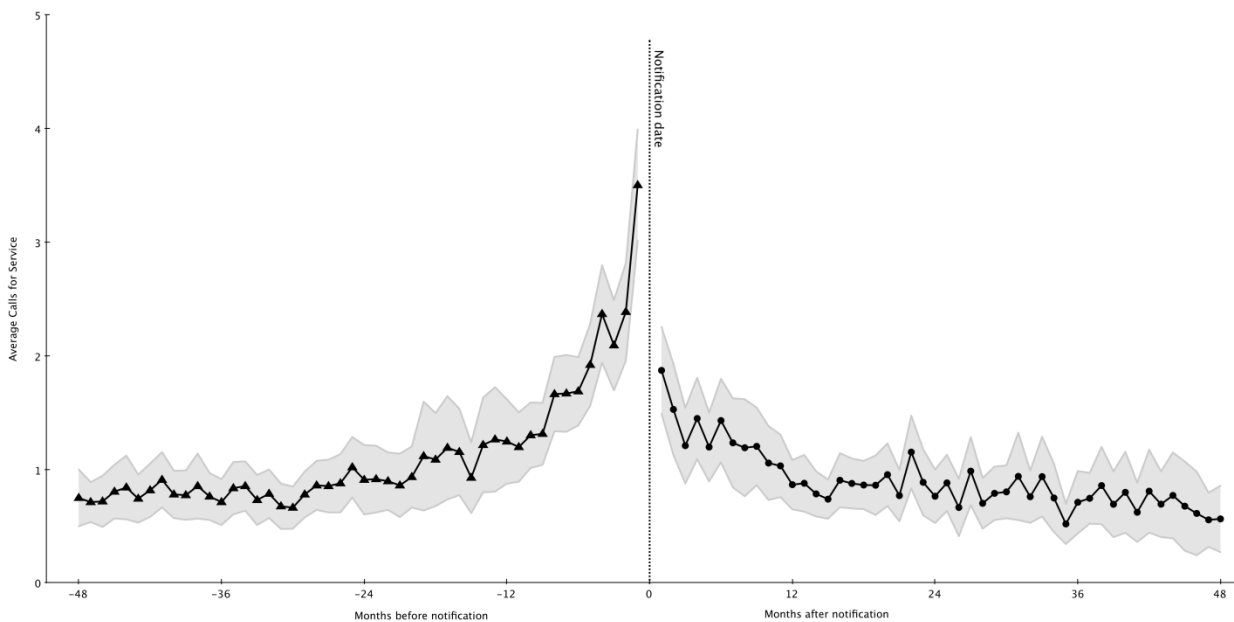


Figure 3 shows that the chronic nuisance process works as designed. Average calls for service increase dramatically over the 12 months before the nuisance notification then decline just as dramatically after the notification. There is not a general “rebound effect” to chronic nuisance notifications in Green Bay, even over a follow-up period as long as four years.

Multivariate model

The analyses presented so far assume that the notification date is the intervention of interest. This could be misleading. The notification date is a useful starting point but oversimplifies the chronic nuisance process. Chronic nuisance enforcement involves notification followed by a monitoring period. During the monitoring period, the Green Bay Police Department closely monitors calls for service and owner compliance with the submitted abatement plan. The monitoring periods vary in length by property. This is by design; a fixed monitoring period would not be responsive to the needs of each property.

The average length of monitoring period is substantial: 15.64 months with a minimum of four months and a maximum of 46 months. If the intervention of interest is the entire chronic nuisance process, then using the notification date as the dividing line between pre/post intervention periods oversimplifies the intervention. This problem is depicted in Figure 4, showing calls for service and monitoring periods for two parcels, 10-101 and 14-411. Parcel 10-101 has a monitoring period of 26 months while parcel 14-411 has a monitoring period of 14 months.

Figure 4: Calls for service and monitoring periods for two parcels

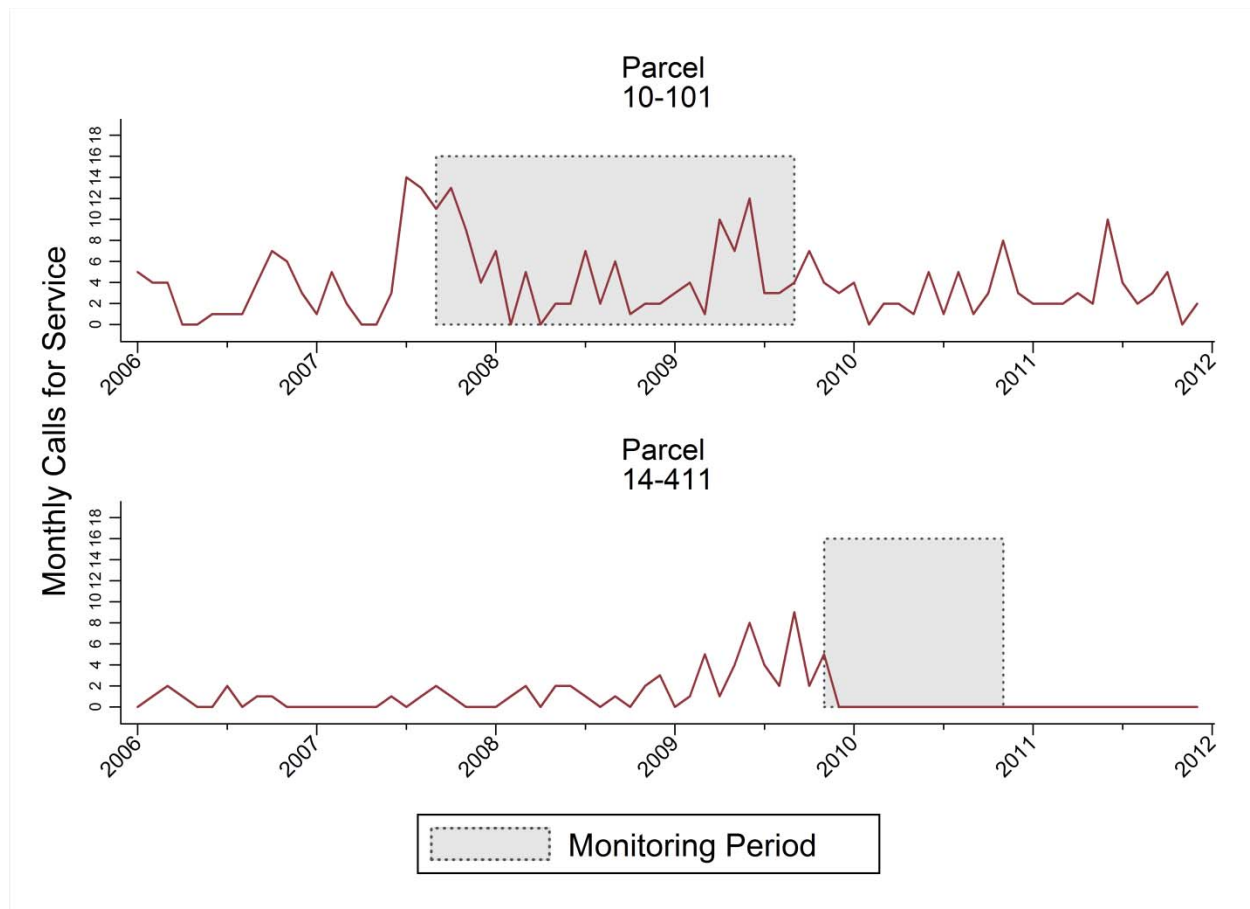


Figure 4 also illustrates an ideal case chronic nuisance enforcement success in parcel 14-411. Calls for service start trending upward at the end of 2008 and throughout 2009. A chronic nuisance notification was issued in October, 2009. Calls for service immediately dropped to zero until the end of the monitoring period and remained stable at zero through the end of analyzed data (December, 2011). Enforcement was not as successful at parcel 10-101, where calls for service remained high during most months throughout the study period.

In addition to the differences in monitoring periods, the earlier analyses could not account for overall city-level trends in calls for service. Panel data and mixed regression modeling solve these problems, allowing us to explicitly model the effect of multiple factors simultaneously while controlling for city-level trends. Mixed models also allow for factors that vary within parcels (e.g., chronic nuisance monitoring status) and factors that vary only between parcels (e.g., number of living units). The model described below also makes use of more information than the simple analysis presented earlier. Calls for service from May 1, 2002 through December 27, 2011 for all 163 single-nuisance notification parcels are included in the mixed model.

Table 6 shows the results from this regression. The dependent variable is monthly calls for service. The city-wide trend is controlled for (coefficient not shown). District, number of dwelling units, and chronic nuisance monitoring status are the explanatory variables. Coefficients marked with an asterisk (*) are statistically significant at the $p < 0.05$ level. Each positive coefficient is the increase in

monthly calls for service for a one unit increase in the independent variable; each negative coefficient is the decrease in monthly calls for service for a one unit increase in the independent variable. All effects are independent of the others – the coefficient for an independent variable is the effect “holding all else constant.”

All of the included variables are statistically significant. District is entered in the model as a series of yes/no variables with the most common district, B, as the comparison category. Each district coefficient is therefore the effect of that district relative to district B. Chronic nuisance places in district C have 0.347 more calls for service per month, holding all else constant. Districts A and D are not significantly different from district B.

Table 6: Mixed model of monthly calls for service controlling for city-wide trends

	Coefficient	Std. Err.
Intercept (calls for service)	0.493*	0.118
District (compared to B)		
A	-0.024	0.232
C	0.347*	0.150
D	0.243	0.241
Living Units	0.085*	0.024
Monitoring period	-0.376*	0.088
After monitoring period	-1.168*	0.077
Random effects	Variance	
Monitoring period	0.873*	0.121
After monitoring period	0.394*	0.062
Intercept, level-2	0.622*	0.074
Level-1 error	2.326	0.241
Log-likelihood	-35626.570	
N=163; t=117		
* p < 0.05		

The number of living units is significant and positive, with larger buildings having more calls for service on average. The effect of living units is small, however. Each additional living unit corresponds to a 0.085 increase in calls for service. In other words, an increase of about 12 dwelling units corresponds to a one call for service increase among chronic nuisance places. The majority (83.77%) of chronic nuisance places have four or fewer dwelling units. The substantive effect of dwelling units is therefore quite small for most nuisance places. This somewhat counter-intuitive effect is not unique to Green Bay – the number of dwelling units is generally unimportant unless the building is very large.

The two variables of primary interest are monitoring period and after monitoring period. Similar to the analyses presented earlier, average calls for service decrease after owners are notified of a chronic nuisance. Monitoring period is defined as the months between notification and closure. After monitoring period is defined as any month that occurs after the police department ceases monitoring calls for service at that location. Monthly calls for service are 0.343 lower during the monitoring period compared to the months before notification. Calls for service are 1.168 lower after monitoring stops compared to the months before notification. The overall average monthly calls for service is 0.949 for

these chronic nuisance places over this time period, so these reductions are both statistically significant and substantively meaningful.

Multiple-notice places

When properties experience multiple problems separated by months (or years) those properties received multiple chronic nuisance notices during the study period. The preceding analyses ignored the multiple notice places for two reasons. First, the multiple monitoring periods complicate the definition of the intervention period. For all other parcels, the intervention period is easily defined: it is the time period between notification and the close of monitoring. For multiple-notice parcels, the intervention period is multiple periods of time.

Second, there are only 12 properties that have received multiple chronic nuisance notices over the entire life of the program beginning April 15, 2003. Only one property received three chronic nuisance notifications; no property received more than three notices. Places that required multiple notices are therefore exceedingly rare in Green Bay and usually have two notices. In some cases, for example, a new notice was generated due to a change in owner. Many of these properties have circumstances unique to each property.

Figure 5 shows calls for service at one of these multiple-notice places. Monthly calls for service at parcel 18-822-A hit an all-time high in the August of 2006 which lead to a chronic nuisance notification. Calls dropped during the monitoring period but increased throughout 2009, resulting in a second notice in July, 2009. During and after the second monitoring period, calls for service were greatly reduced.

Figure 5: Calls for service at a multiple-notice place

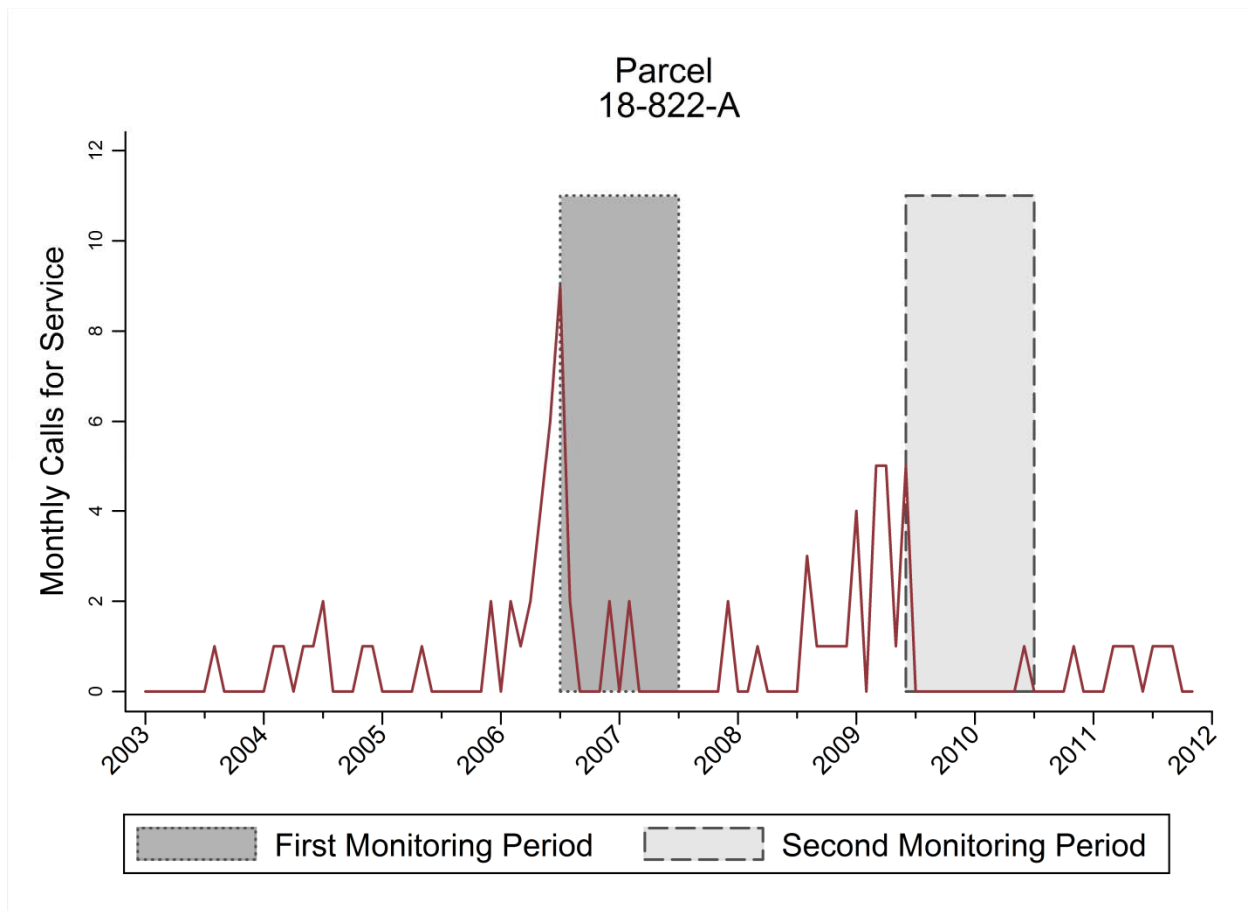


Figure 5 shows a similar pattern for multiple-notification properties as that seen for single-notification properties. Specifically, calls for service increase in the period just before notification, then decline during and after notification.

Table 7 shows the average calls for service for the 12 multiple-notice properties during each time period. On average, calls for service are lower for each successive time period.

Table 7: Average monthly calls for service at multiple-notice properties

	Before first notice	First monitoring period	Between monitoring periods	Second monitoring period	After second monitoring period
Average monthly calls for service	2.12	2.50	2.15	1.87	1.08

Multiple-notice properties have higher calls for service on average than single-notice properties even after the second monitoring period. Yet calls for service are reduced by approximately 50% compared to before the first chronic nuisance notification. Even for these problematic multiple-notice properties, chronic nuisance notification is associated with a marked reduction in calls for service.

Summary and limitations

This study found that chronic nuisance enforcement is associated with a reduction in subsequent calls for service at the parcel regardless of the statistical test and complexity of the analysis. On average, there is an immediate reduction in calls for service after the notification with further reductions in calls for service after the monitoring period has concluded. The effect of chronic nuisance notification is long-lasting, with no general trend of increased calls for service after the conclusion of the monitoring period. Even at properties that have been served with multiple notices, average calls for service are lower after the chronic nuisance notification than before the chronic nuisance notification.

The Green Bay Police Department expends considerable effort on each chronic nuisance parcel. Calls for service must be examined to determine if they meet the ordinance definitions. Police personnel meet with the owner to discuss problems and write an abatement plan. Often, community police officers make multiple site visits to the property to assess physical characteristics and share crime prevention strategies with the owner and residents. Preparing ongoing monitoring reports and, when necessary, documentation for billing also consumes time. At the same time, the process risks damaging community relations if property owners feel they are billed improperly.

The findings presented here suggest continuation of chronic nuisance enforcement at parcels. These findings suggest continued reliance on discretionary enforcement of Chapter 28 to avoid the financial and community relations costs of over-enforcement. Over the past several years, Green Bay's chronic nuisance program has earned a reputation among landlords. The mere possibility of financial penalties for noncompliance has made owners more cognizant of their responsibilities. Anecdotally, the police department has found that owners are more active in monitoring their properties and owners are more willing to seek crime prevention advice from the police. This includes taking advantage of email alerts sent to landlords when calls for service occur at their properties.

Like any study, this study has limitations. First, there is no control group to compare the chronic nuisance parcels to. Without a control group, it is difficult to determine what might have happened had no chronic nuisance enforcement occurred at the study parcels. The selection process for chronic nuisance enforcement makes finding a control group difficult because there are not parcels similar to the nuisance parcels that did not receive nuisance enforcement. Random assignment of nuisance places to experimental and control groups in the future is unlikely as well, given obvious ethical concerns.

This study also uses a relatively crude outcome measure: the outcome variable was a simple count of calls for service. We did not examine the types of calls for service. There are other outcomes of interest for which we lack data. For example, does chronic nuisance enforcement improve community satisfaction with police? Does chronic nuisance enforcement lead to lower overall consumption of city services (fire, inspection services, etc)? Does a successful chronic nuisance abatement lead to long-term partnerships with property owners? Do owners apply lessons learned at one chronic nuisance property to all of their properties? Does chronic nuisance enforcement reduce officer-hours at the location? This analysis lacks data to evaluate such questions.

Recommendations

Green Bay's ordinance and procedure is well-positioned to handle chronic nuisances. City Ordinance Chapter 28 has been revised multiple times at the request of the police department and the policies in place have evolved to meet new challenges as well. Still, there are improvements that could be made:

- Continue to record detailed information for each chronic nuisance case to facilitate further analysis. The Green Bay Police Department has maintained a remarkably complete database for chronic nuisance issues. This effort should be continued.
- Collect data on other outcome measures. While calls for service is the primary measure, the chronic nuisance notification process could have other effects that are of interest such as:
 - Community satisfaction
 - Partnerships with landlords
 - Diffusion of crime prevention benefits to owners' other, non-notified properties
 - Officer time spent at chronic nuisance properties
- Consider creating objective criteria for compliance. The monitoring period should vary by parcel. However, the criteria for closing a chronic nuisance case are not clear. This can lead to cases left open longer than is necessary, increasing the workload on officers and analysts while making evaluation more difficult.
- Encourage officers and dispatch to enter accurate arrival and clear times in the CAD. Calculating officer-hours engaged at any given parcel was theoretically possible because arrival time and clear time fields exist. Data in these fields were often missing, however. The time fields also contained other inconsistencies (e.g., improbable or impossible duration on-scene) making it impossible to accurately calculate officer-hours per parcel.
- Partner with local landlord associations to encourage professional development among landlords, particularly as it relates to crime prevention. Other cities, such as Portland, Oregon, have successfully implemented a landlord training program. Such training programs are difficult to implement. Considerable outreach is often necessary for such programs because small landlords are most in need of training but are least likely to be members of professional associations.
- Continue developing automated early warning systems for nuisance activity. These early warnings could be used internally to direct community police officers to emergent problems in their neighborhoods and externally to alert owners of *potential* problems at their properties. Early warning systems could also be used to communicate with property owners – many property owners are unaware of problems on their properties until notified by police. Early notification of problems would help owners to address potential problems before they became entrenched nuisances.
- Continue to make chronic nuisance determinations using human judgment, following an in-depth analysis and investigation. While automated tools are helpful for warning systems, the screening criteria used when making an official determination of whether a property is a chronic nuisance are complex. Given this complexity and the sensitivity of the issues involved, human judgment is required when making official determinations and billing decisions.
- Consider altering the ordinance to reduce police officer and analyst time required for each chronic nuisance case. Specifically:
 - Allow calls for service with no enforcement action to count against the property. The current ordinance requires an enforcement action to occur before a

nuisance activity counts for the purposes of chronic nuisance abatement. However, there are many nuisances where a citation or arrest are not feasible. A loud fight or disturbance, for example, may break up before police arrive at the location.

- Avoid listing specific offenses. Altering the ordinance to allow the chronic nuisance process for most calls for service would allow easier qualification of nuisances by police staff. Statutory and policy considerations suggest excluding certain calls, such as domestic violence, from chronic nuisance enforcement. It is likely preferable to list these excluded calls in the ordinance rather than the calls that are included.

Methodology

Matching calls for service to nuisance places

Michelle Arneson provided multiple files: 1) Microsoft Access database with calls for service (CFS) from April 1, 2002 through December 28, 2011; 2) Microsoft Access database with chronic nuisance enforcement locations; 3) ArcGIS shapefiles containing base layer information for Green Bay, Wisconsin, and the surrounding area (parcels, streets, and municipal outlines).

The biggest technical challenge is matching CFS to nuisance locations. The CFS table contained addresses. The chronic nuisance table contained addresses and parcel identifiers. Address was used as the key field to match the nuisance and CFS tables. Both CFS and nuisance addresses were passed through an ArcGIS 9.2 address location algorithm to standardize addresses. Calls for service were aggregated by month and address, creating a count of calls per month at each address. Calls for service at each address per month were then matched with nuisance addresses by the standardized address string produced by ArcGIS 9.2's geolocator. Counts of calls for service at addresses with chronic nuisance enforcement existing on the same parcel were then combined, yielding the monthly count of calls for service per nuisance parcel.

This method of matching calls for service to nuisance parcels produces an unknown level of error. However, the primary comparison in this report is calls for service before the chronic nuisance notification to calls for service after the nuisance notification. There is no reason to suspect that matching errors differ during the pre-notification and post-notification period.

Single-notice inclusion criteria

Nuisance enforcement occurred 262 times at 242 unique parcels between April 2005 and December 2011. Parcels were included in the single-notice analysis only if 1) The enforcement was chronic nuisance⁷; 2) The enforcement occurred between October 7, 2006⁸ and December 27, 2010⁹; 3) The parcel had only one enforcement period. One hundred sixty-three (163) parcels met these inclusion criteria. Table 8 summarizes the reasons for exclusion.

⁷ The legal definition of chronic nuisance and public nuisance are similar but not identical. It is possible that notification operates differently for the two nuisance types. The overwhelming majority (95%) of nuisance enforcement is pursuant to chronic nuisances.

⁸ Chapter 28 was first enacted April 15, 2003, and was amended January 25, 2005, July 8, 2006, and October 7, 2006 to change the geographic extent (unit versus parcel) and exactly what calls for service qualify as "nuisance" calls.

⁹ Calls for service data was provided from April 1, 2002 through December 27, 2011. December 27, 2010 is therefore the last date for which a 12-month follow-up could be calculated after chronic nuisance notification.

Table 8: Excluded parcels

Reason for exclusion	Number of parcels ¹
Public nuisance instead of chronic	10
Nuisance notification before October 7, 2006	48
Nuisance notification after December 27, 2010	24
Multiple enforcement periods	12 ²
Total number of excluded parcels	79

1: Does not sum to total because parcels could be excluded for multiple reasons.

2: These are examined separately.